IN THE CLAIMS

1. (Original) A process for producing an inorganic-inorganic composite material for use in the dental sector, in which

- after shape-imparting processing and presintering of a powder containing oxide ceramic, an open-pore, crystalline oxide ceramic shaped part is produced,
- an infiltration substance, which consists of a precursor of a nonmetallic-inorganic phase, or an amorphous glass phase and a solvent, or of a hydrolysable compound of a metal, or contains an alkoxide of a metal, or a precursor of a silicate glass, in particular a hydrolysable silane, is applied to this shaped part at room temperature,
- the penetration of the infiltration substance into the oxide ceramic body is carried out during an infiltration time of less than 10 minutes, and
- under an air atmosphere and at ambient pressure, the oxide ceramic is sintered in a densifying manner, to a theoretical density of at least 99.5%, at a temperature of from 1000°C to 1600°C to form the inorganic-inorganic composite material.

2. (Currently Amended) The process as claimed in ~~one of the preceding claims, characterized in that~~ claim 1, wherein for the shape-imparting processing the powder containing oxide ceramic

is provided with an organic binder and pressed.

3. (Currently Amended) The process as claimed in ~~one of the preceding claims, characterized in that~~ claim 1, wherein the organic binder is an ethylenic wax material, in particular an ethylenic wax, a polyvinyl resin, a polyvinyl pyrrolidone, polyvinyl acetate, a polyvinyl butyral and/or cellulose.

4. (Currently Amended) The process as claimed in ~~one of the preceding claims, characterized in that~~ claim 1, wherein the presintering takes place at a temperature of from 600 to 1300°C.

5. (Currently Amended) The process as claimed in ~~one of the preceding claims, characterized in that~~ claim 1, wherein the infiltration substance is applied in vacuo.

6. (Currently Amended) The process as claimed in ~~one of the preceding claims, characterized in that~~ claim 1, wherein penetration takes place at less than 40 mbar.

7. (Currently Amended) The process as claimed in claim 4, ~~characterized in that~~ wherein penetration takes place at 10 to 30 mbar.

8. (Currently Amended) The process as claimed in ~~one of the preceding claims, characterized in that~~ claim 1, wherein the infiltration substance is applied in a layer thickness of from 2 to 90% of the thickness of the presintered open-pore crystalline oxide ceramic.

9. (Currently Amended) The process as claimed in claim 8, ~~characterized in that~~ wherein the layer thickness of the infiltration substance amounts to 2 to 30% of the thickness of the dense-sintered inorganic-inorganic composite material.

10. (Currently Amended) The process as claimed in claim 9, ~~characterized in that~~ wherein the layer thickness amounts to 5 to 20%.

11. (Currently Amended) The process as claimed in ~~one of the preceding claims, characterized in that~~ claim 1, wherein for the dense-sintering the infiltration substance is applied in a layer thickness of 5 - 90% of the thickness of the presintered oxide ceramic shaped part.

12. (Currently Amended) The process as claimed in claim 11, ~~characterized in that~~ wherein it is applied in a layer thickness of from 10 to 90%.

13. (Currently Amended) The process as claimed in ~~one of the preceding claims, characterized in that~~ claim 1, wherein the infiltration substance is applied in the presence of a solvent.

14. (Currently Amended) The process as claimed in claim 13, ~~characterized in that~~ wherein a polar or nonpolar solvent is used.

15. (Currently Amended) The process as claimed in ~~claim 13 or 14, characterized in that~~ claim 13, wherein the solvent used is water or alcohol.

16. (Currently Amended) The process as claimed in ~~one of the preceding claims, characterized in that~~ claim 1, wherein further external shaping of the composite material by material-removing machining takes place prior to the infiltration.

17. (Currently Amended) The process as claimed in ~~one of the preceding claims, characterized in that~~ claim 1, wherein the external shaping of the composite material by material-removing machining and/or etching takes place after the infiltration or after the full sintering, which takes place in particular at ambient pressure.

18. (Currently Amended) The process as claimed in ~~one of the preceding claims, characterized in that~~ claim 1, wherein an adhesive agent is applied to at least sections of the surface of the composite material, and/or a further material is attached.

19. (Currently Amended) The process as claimed in ~~one of the preceding claims, characterized in that~~ claim 1, wherein an at least one-layer coating is applied at least to sections of the surface of the composite material and is subjected to a further heat treatment in particular after it has been applied.

20. (Currently Amended) The process as claimed in ~~one of the preceding claims, characterized in that~~ claim 1, wherein following the partial sintering of the composite material with an oversize of 10 to 50%, a material-removing machining operation is carried out for the imparting of the shape.

21. (Currently Amended) The process as claimed in claim 19, ~~characterized in that~~ wherein the material-removing machining is carried out with an oversize of from 15 to 30%.

22. (Currently Amended) The process as claimed in ~~one of the preceding claims, characterized in that~~ claim 1, wherein the powder containing oxide ceramic is processed to form an open-pore oxide ceramic shaped part in the form of a monolithic block or cylinder.

23. (Currently Amended) The process as claimed in claim 22, ~~characterized in that~~ wherein the monolithic block or cylinder undergoes chip-forming machining.

24. (Currently Amended) The process as claimed in claim 23, ~~characterized in that~~ wherein after the chip-forming machining the infiltration substance is applied in vacuo.

25. (Currently Amended) An inorganic-inorganic composite material, ~~characterized in that~~ wherein it has a translucent inner region made from a crystalline oxide ceramic and a layer of an infiltration substance which at least partially surrounds or covers the inner region which contains the precursor of a nonmetallic-inorganic phase or of an amorphous glass phase or of a hydrolysable compound of a metal or of an alkoxide of a metal selected from the group of elements consisting of Al, Ti, Zr or Si or contains a hydrolysable silane, and has a theoretical

density of >99.5% and a biaxial strength of not less than 800 MPa and a fracture toughness of more than 6.5 MPa m1/2.

26. (Currently Amended) The composite material as claimed in ~~one of the preceding claims, characterized in that~~ claim 25, wherein the open-pore, crystalline oxide ceramic contains zirconium oxide and additions of yttrium oxide.

27. (Currently Amended) The composite material as claimed in ~~one of the preceding claims, characterized in that~~ claim 25, wherein the zirconium oxide contains additions of from 2 to 4 mol%, in particular in the range from 2 to 10 mol% of yttrium oxide or of 2.5 to 15 mol% of cerium oxide or 2.5 to 5 mol% of erbium oxide or 2.5 to 5 mol% of scandium oxide or of 0.1 to 15 mol% of titanium dioxide or mixtures of two or more of the abovementioned oxides in the quantities indicated.

28. (Currently Amended) The composite material as claimed in claim 26, ~~characterized in that~~ wherein the zirconium oxide contains additions of from 2 to 4 mol% of yttrium oxide.

29. (Currently Amended) The composite material as claimed in ~~one of the preceding claims, characterized in that~~ claim 25, wherein the open-pore, crystalline oxide ceramic contains aluminum oxide

and mixtures of further metal oxides and/or zirconium oxide, preferably tetragonal zirconium oxide.

30. (Currently Amended) The composite material as claimed in claim 25, ~~characterized in that~~ wherein the precursor of the non-metallic-inorganic phase contains ionogenic or covalent compounds of the elements of groups Ia, IIa, IIIa, IVa, IIIb, IVb, Vb, VIb, VIIb, VIIIb, where a denotes the main groups and b the transition groups of the periodic system of the elements.

31. (Currently Amended) The composite material as claimed in claim 25, ~~characterized in that~~ wherein the infiltration substance contains covalent bonds of Si and/or Zr.

32. (Currently Amended) The composite material as claimed in claim 25, ~~characterized in that~~ wherein the infiltration substance contains ionogenic compounds, preferably Ce, Mn, V, Fe or mixtures of said elements.

33. (Currently Amended) The composite material as claimed in claim 25, ~~characterized in that~~ wherein the amorphous glass phase is silicate glass, preferably an alkali-metal-free silicate glass.

34. (Currently Amended) The composite material as claimed in claim 25, ~~characterized in that~~ wherein the infiltration substance contains tetraethyl orthosilicate as hydrolysable compound.

35. (Currently Amended) The composite material as claimed in claim 25, ~~characterized in that~~ wherein the infiltration substance contains alkoxides of silicon or aluminum.

36. (Currently Amended) The composite material as claimed in ~~one of the preceding claims, characterized in that~~ claim 25, wherein the inner region is translucent and the layer of infiltration substance is cloudy-white.

37. (Currently Amended) The composite material as claimed in ~~one of the preceding claims, characterized in that~~ claim 25, wherein the inner region has a translucency which corresponds to that of hot isostatically pressed sintered ceramics.

38. (Currently Amended) The use of the crystalline, open-pore oxide ceramic and of the inorganic-inorganic composite material produced therefrom as claimed in ~~one of claims 20 to 36~~ claim 20 in the dental sector, preferably as a dental restoration, implant, implant part or orthodontic product.

39. (Currently Amended) The use as claimed in claim 38, ~~characterized in that~~ wherein the dental restoration is a dental framework, a crown, a partial crown, a bridge, a cap, a shell, a veneer, an abutment or a post structure.